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10/576,596

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EXAMINER

EL SHAMMAA, MARY A

ART UNIT

PAPER NUMBER

2883

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                                       |  |  |
|------------------------------|---------------------------------------|--|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/576,596  | <b>Applicant(s)</b><br>CLAPP, TERRY VICTOR |  |
|                              | <b>Examiner</b><br>MARY A. EL SHAMMAA | <b>Art Unit</b><br>2883                    |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-43 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/06</u> . | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-7, and 9-43 are rejected under 35 U.S.C. 102(b) as being anticipated by US 2003/0039447 A1 (herein “Clapp”).

Regarding claims 1 and 26, Clapp discloses in at least figure 2, and apparatus and a method, comprising: a substrate (discussed in at least paragraph [0048]); a first layer (102) of waveguiding material above the substrate, the first layer having a first index of refraction, a first horizontal dimension, and a first vertical dimension; and a second layer (104) of waveguiding material adjacent the first layer, the second layer having a second index of refraction, a second horizontal dimension, and a second vertical dimension (see at least Abstract, paragraphs [0013], [0029], [0042-0043], [0049]).

Regarding claims 2, 27, and 40, Clapp discloses wherein a selected electromagnetic mode propagates in a portion of the first layer approximately defined by at least one of the second horizontal dimension, the first vertical dimension, the first index of refraction, and the second index of refraction (see at least paragraphs [0042-0043], [0049], [0052], [0057]).

Regarding claims 3, 4, and 14, and 15, Clapp discloses a selected polarization mode that is a transverse electric mode (see at least paragraphs [0023], [0025], [0051], [0060-0062]).

Regarding claims 5, 28, and 41, Clapp discloses the second vertical dimension is smaller than the first vertical dimension (not labeled but shown in figure 2), the second horizontal dimension is smaller than the first horizontal dimension (not labeled but shown in figure 2), and the second index of refraction is larger than the first index of refraction (see at least Abstract, paragraphs [0013], [0015], [0029], [0042-0043], [0049]).

Regarding claims 6 and 7, Clapp discloses the second vertical dimension of approximately 350 angstroms and the first index of refraction is approximately 1.5 and the second index of refraction is approximately 2 (see at least paragraph [0049]).

Regarding claims 9 and 29, Clapp discloses in at least figure 2, an upper cladding (114) above the second layer (104) and at least a portion of the first layer (102).

Regarding claims 10, 30, 34, and 35, Clapp discloses in at least figure 2, an active element (106) above a portion of the second layer (104), the active element (106) having a third index of refraction such that a portion of the selected electromagnetic mode propagates in the active element (see at least Abstract, paragraphs [0013], [0015], [0029], [0042-0043], [0049-0050]).

Regarding claims 11, 20, 31, 36, and 43, Clapp discloses the active element (106) comprises at least one of an electro-optically active element and a magneto-optically active element (see at least Abstract, paragraphs [0013], [0015], [0029], [0042-0043], [0049-0051], [0057], [0060-0062]).

Regarding claims 12, 22, 32, and 38, Clapp discloses in at least figure 2, a plurality of electrodes (112) deployed proximate the active element (106) and capable of providing an electric field to the active element (106).

Regarding claim 13, Clapp disclose sin at least figure 2, an apparatus, comprising: a substrate (discussed in at least paragraph [0048]); a first layer (102) of waveguiding material above the substrate, the first layer having a first index of refraction; a second layer (104) of waveguiding material above the first layer, the second layer having a second index of refraction; and an active element (106) above a portion of the second layer, the active element (106) having a third index of refraction selected such that a portion of the selected electromagnetic mode propagates in the active element (106) (see at least Abstract, paragraphs [0013], [0015], [0029], [0042-0043], [0049-0051], [0057], [0060-0062]).

Regarding claim 16, Clapp discloses in at least figure 2, the first layer of waveguiding material has a first horizontal dimension and a first vertical dimension (not labeled but shown in figure 2), wherein the second layer of waveguiding material has a second horizontal dimension and a second vertical dimension (not labeled but shown in figure 2), and wherein the second vertical dimension is smaller than the first vertical dimension and the second horizontal dimension is smaller than the first horizontal dimension (not labeled but shown in figure 2) (see at least Abstract, paragraphs [0013], [0015], [0029], [0042-0043], [0049-0051], [0057], [0060-0062]).

Regarding claim 17, Clapp discloses the second index of refraction is larger than the first index of refraction such that a selected electromagnetic mode propagates in a portion of the first layer approximately defined by the second horizontal dimension and the first vertical dimension (see at least Abstract, paragraphs [0013], [0015], [0029], [0042-0043], [0049-0051], [0057], [0060-0062]).

Regarding claims 18, 19, and 21, Clapp discloses the third index of refraction is intermediate the first and second indices of refraction or is larger than the first and second indices of refraction (see at least Abstract, paragraphs [0013], [0015-0016], [0029], [0042-0043], [0049-0051], [0057], [0060-0062]).

Regarding claim 23, Clapp discloses in at least figure 2, the active element (106) has two ends, each end being tapered (see at least paragraphs [0020], [0050]).

Regarding claims 24 and 25, Clapp discloses integrated circuitry coupled to the first layer of waveguiding material and at least one of the plurality of electrodes (see at least paragraphs [0043] and [0050].)

Regarding claim 33, Clapp discloses in at least figure 2, a method, comprising: forming a first layer (102) of waveguiding material above a substrate, the first layer having a first index of refraction, a first horizontal dimension, and a first vertical dimension (not labeled but shown in figure 2); forming a second layer (104) of waveguiding material above the first layer, the second layer having a second index of refraction, a second horizontal dimension, and a second vertical dimension, the second vertical dimension being smaller than the first vertical dimension (not labeled but shown in figure 2), the second horizontal dimension being smaller than the first horizontal dimension, and the second index of refraction being larger than the first index of refraction such that a selected electromagnetic mode propagates in a portion of the first layer approximately defined by the second horizontal dimension and the first vertical dimension; and forming an active element (106) above a portion of the second layer, the active element having a third index of refraction such that a portion of the selected electromagnetic mode propagates in

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the active element (see at least Abstract, paragraphs [0013], [0015-0016], [0030], [0042-0043], [0049-0051], [0057], [0060-0062]).

Regarding claim 37, Clapp discloses forming the active elements having the third index of refraction that is variable within a range of indices of refraction in response to an electric field applied to the active element (see at least paragraphs [0013], [0015-0016], [0049-0051]).

Regarding claim 39, Clapp discloses in at least figure 2, a system for transforming optical wave modes, comprising: an optical wave mode transformer optically coupled to a light source (see at least paragraph [0027]), the optical wave mode transformer comprising: a first layer (102) of waveguiding material above the substrate, the first layer having a first index of refraction, a first horizontal dimension, and a first vertical dimension (shown but not labeled in figure 2); and a second layer (104) of waveguiding material above the first layer, the second layer having a second index of refraction, a second horizontal dimension, and a second vertical dimension (shown but not labeled in figure 2); and an optical element that is optically coupled to the optical wave mode transformer to receive the selected electromagnetic mode (see at least Abstract, paragraphs [0013], [0015-0016], [0030], [0042-0043], [0049-0051], [0057], [0060-0062]).

Regarding claim 42, Clapp disclose sin at least figure 2, the optical wave mode transformer further comprises: an active element (106) above a portion of the second layer, the active element having a third index of refraction such that a portion of the selected electromagnetic mode propagates in the active element; and a plurality of electrodes (112) deployed proximate the electro-optically active element and capable of providing an electric field to the electro-optically active element (see at least Abstract, paragraphs [0013], [0015-0016], [0030], [0042-0043], [0049-0051], [0057], [0060-0062]).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Clapp.

Regarding claim 8, Clapp discloses the claimed invention except for the substrate being a CMOS chip substrate. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the substrate being a CMOS chip substrate, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use. In re Leshin, 125 USPQ 416.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARY A. EL SHAMMAA whose telephone number is (571)272-2469. The examiner can normally be reached on M-F (8:30am-5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on 571.272.2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mary A. El-Shammaa/  
Patent Examiner, Art Unit 2883

/Frank G Font/  
Supervisory Patent Examiner, Art Unit 2883

*March 30, 2008*  
FGF/mae